# FL MC EF 1300 MM SC - FO converters

2902853

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CRA-READY



FO converter with SC duplex FO connection (1300 nm), for converting 10/100Base-T(X) to multimode fiberglass (50/125 µm). Auto negotiation and auto MDI(X) function. Comprehensive link diagnostics. DIN-rail mountable, 18 V DC ... 30 V DC supply. Product is being prepared for compliance with the Cyber Resilience Act (CRA).

## Product description

Optical transmission with FO technology provides superior immunity to interference at maximum transmission ranges without restricting the transmission bandwidth.

## Your advantages

- Transmission ranges up to 10 km
- Auto negotiation
- Auto MDI/MDI-X switch-over
- Link fault pass through (LFPT) and far end fault (FEF) functions for easy connection monitoring
- 10/100 Mbps
- Shipbuilding approval in accordance with DNV GL

ELEKTROGERÄTE RÜCKNAHME

## Commercial data

| | |
|---|---|
| Item number | 2902853 |

| | |
|---|---|
| Packing unit | 1 pc |
| Minimum order quantity | 1 pc |
| Sales key | DN06 |
| Product key | DNC311 |
| GTIN | 4046356689236 |
| Weight per piece (including packing) | 179 g |
| Weight per piece (excluding packing) | 179 g |
| Customs tariff number | 85176200 |
| Country of origin | US |

# Technical data

## Notes

Note on application

| | |
|---|---|
| Note on application | Only for industrial use |
| Note on application | As things stand now, we are preparing the product so that, as of December 11, 2027, it will comply with the requirements of the EU Cyber Resilience Act (CRA) based on the information currently available regarding the CRA. |

Utilization restriction

| | |
|---|---|
| CCCex note | Use in potentially explosive areas is not permitted in China. |

## Product properties

| | |
|---|---|
| Product type | Media converter |
| MTTF | 1400 Years (SN 29500 standard, temperature 25°C, operating cycle 21%) |
| | 599 Years (SN 29500 standard, temperature 40°C, operating cycle 34.25%) |
| | 101 Years (SN 29500 standard, temperature 40°C, operating cycle 100%) |
| MTBF | 479 Years (Telcordia standard, 25°C temperature, 21% operating cycle (5 days a week, 8 hours a day)) |
| | 140 Years (Telcordia standard, 40°C temperature, 34.25% operating cycle (5 days a week, 12 hours a day)) |
| Special properties | The product is being prepared for compliance with the Cyber Resilience Act (CRA) |
| Signal delay | ± 1.3 µs (Store and Forward mode, 10/100 Mbps, depending on the frame size) |

Functions

| | |
|---|---|
| Basic functions | Store-and-forward media converter |

Security functions

| | |
|---|---|
| Basic functions | Store-and-forward media converter |

## System properties

Functionality

| | |
|---|---|
| Basic functions | Store-and-forward media converter |

## Electrical properties

| | |
|---|---|
| Electrical isolation | according to IEEE 802.3 |
| | VCC // FE // Ethernet |
| Maximum power dissipation for nominal condition | 2.4 W |
| Test voltage data interface/power supply | 0.5 $kV_{rms}$ (50 Hz, 1 min.) |

Supply

| | |
|---|---|
| Supply voltage range | 18 V DC ... 30 V DC (Screw connection) |
| | 18 V DC ... 30 V DC (as an alternative or redundant, via backplane bus contact and system current supply) |
| Nominal supply voltage | 24 V DC |
| Typical current consumption | 100 mA (24 V DC) |
| Protective circuit | Reverse polarity protection |

## Connection data

Supply

| | |
|---|---|
| Connection method | Plug-in screw terminal block (COMBICON), redundancy possible |
| Single conductor/terminal point, rigid | 0.2 mm² ... 2.5 mm² |
| Single-wire/terminal point, flexible | 0.2 mm² ... 2.5 mm² |
| Conductor cross-section, flexible [AWG] | 24 ... 14 |
| Stripping length | 7.00 mm |
| Tightening torque | 0.56 Nm ... 0.79 Nm |

## Interfaces

| | |
|---|---|
| Signal | Ethernet |
| Basic functions | Store-and-forward media converter |

Data: optical FO

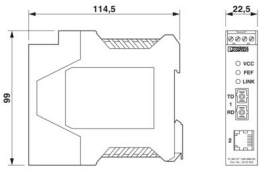
| | |
|---|---|
| Transmit capacity, minimum | ≥ -23.5 dBm ((50/125 µm) dynamic in link mode (average)) |
| | ≥ -20 dBm ((62,5/125 µm) dynamic in link mode (average)) |
| Transmit capacity, maximum | ≤ -14 dBm ((50/125 µm) dynamic in link mode (average)) |
| | ≤ -14 dBm ((62,5/125 µm) dynamic in link mode (average)) |
| Transmission length incl. 3 dB system reserve | 6.4 km (F-G 50/125 0.7 dB/km F 1000) |
| | 2.8 km (F-G 50/125 1.6 dB/km F 800) |
| | 10 km (F-G 62.5/125 0.7 dB/km F 1000) |
| | 3 km (F-G 62.5/125 2.6 dB/km F 600) |
| Connection method | SC duplex |
| Wavelength | 1300 nm |
| Minimum receiver sensitivity | -31 dBm (dynamic in link mode (average)) |
| Maximum receiver sensitivity | -14 dBm (dynamic in link mode (average)) |
| Transmission medium | Multi-mode fiberglass |
| | GI-HCS fiber |

Data: Ethernet interface, 10/100Base-T(X) in accordance with IEEE 802.3

| | |
|---|---|
| Transmission speed | 10/100 Mbps |
| Connection method | RJ45 jack, shielded |
| No. of channels | 1 |
| Transmission length | 100 m (shielded twisted pair) |
| Transmission medium | Copper |
| Signal LEDs | Activity, link status, 10/100 Mbps |
| Auto-negotiation modes | Auto |
| Link through | Link fault pass through |

| | |
|---|---|
| MDI-/MDI-X switchover | Auto-MDI(X) |

## Dimensions

| | |
|---|---|
| Dimensional drawing |   |
| Width | 22.5 mm |
| Height | 99 mm |
| Depth | 114.5 mm |

## Material specifications

| | |
|---|---|
| Color (Housing) | green (RAL 6021) |
| Material (Housing) | PA 6.6-FR |

## Cable/line

FO cable

| | |
|---|---|
| Fiber types | 50/125 µm |
| | 62.5/125 µm |
| | Fiberglass |

## Mechanical tests

| | |
|---|---|
| Free fall in accordance with IEC 60068-2-32 | Free fall: 1 m |
| Vibration resistance in accordance with EN 60068-2-6/IEC 60068-2-6 | Operation: 5g, 10...150 Hz, 2.5 h, in XYZ direction |
| Shock in accordance with EN 60068-2-27/IEC 60068-2-27 | Operation: 25g, 11 ms period, half-sine shock pulse |

## Environmental and real-life conditions

Ambient conditions

| | |
|---|---|
| Degree of protection | IP20 |
| Ambient temperature (operation) | -40 °C ... 65 °C |
| Ambient temperature (storage/transport) | -40 °C ... 85 °C |
| Altitude | ≤ 5000 m (For restrictions, see the manufacturer's declaration for altitude operation) |
| | ≤ 2000 m (in acc. with UL) |
| Permissible humidity (operation) | 5 % ... 95 % (non-condensing) |
| Permissible humidity (storage/transport) | 5 % ... 95 % (non-condensing) |
| Air pressure (operation) | 80 kPa ... 110 kPa |

## Approvals

CE

| | |
|---|---|
| Certificate | CE-compliant |

IECEx

| | |
|---|---|
| Identification | Ex ec [op is Gb] IIC T4 Gc |
| | [Ex op is Db] IIIC |
| Certificate | IECEx ULD 24.0009X |

ATEX

| | |
|---|---|
| Identification | II 3 (2) G Ex ec [op is Gb] IIC T4 Gc |
| | II (2) D [Ex op is Db] IIIC |
| Certificate | UL 24 ATEX 3197X |
| Note | Please follow the special installation instructions in the documentation! |

UL, USA/Canada

| | |
|---|---|
| Identification | 508 Listed |
| | Class I, Zone 2, AEx nA IIC T4 |
| | Class I, Zone 2, Ex nA IIC T4 Gc X |
| | Class I, Div. 2, Groups A, B, C, D |

KC approval for South Korea

| | |
|---|---|
| Certificate | MSIP-REI-PCK-2902853 |

Corrosive gas test

| | |
|---|---|
| Identification | ISA-S71.04-1985 G3 Harsh Group A |

Shipbuilding

| | |
|---|---|
| Identification | DNV GL |

Shipbuilding data

| | |
|---|---|
| Temperature | B |
| Humidity | A |
| Vibration | A |
| EMC | B |
| Enclosure | Required protection according to the Rules shall be provided upon installation on board |

## EMC data

| | |
|---|---|
| Electromagnetic compatibility | Conformance with EMC Directive 2014/30/EU |

Electrostatic discharge

| | |
|---|---|
| Standards/regulations | EN 61000-4-2 |

Electrostatic discharge

| | |
|---|---|
| Contact discharge | ± 6 kV (Test Level 3) |
| Discharge in air | ± 8 kV (Test Level 3) |
| Comments | Criterion B |

Electromagnetic HF field

| | |
|---|---|
| Standards/regulations | EN 61000-4-3 |

Electromagnetic HF field

| | |
|---|---|
| Frequency range | 80 MHz ... 3 GHz (Test Level 3) |
| Field intensity | 10 V/m |
| Comments | Criterion A |

Fast transients (burst)

| | |
|---|---|
| Standards/regulations | EN 61000-4-4 |

Fast transients (burst)

| | |
|---|---|
| Input | ± 2 kV (Test Level 3) |
| Signal | ± 2 kV (Test Level 3) |
| Comments | Criterion B |

Surge current load (surge)

| | |
|---|---|
| Standards/regulations | EN 61000-4-5 |

Surge current load (surge)

| | |
|---|---|
| Input | ± 0.5 kV (DC supply) |
| Signal | ± 1 kV (Data line, asymmetrical) |
| Comments | Criterion B |

Conducted interference

| | |
|---|---|
| Standards/regulations | EN 61000-4-6 |

Conducted interference

| | |
|---|---|
| Frequency range | 0.15 MHz ... 80 MHz |
| Comments | Criterion A |
| Voltage | 10 V |

Emitted interference

| | |
|---|---|
| Standards/regulations | EN 55032 |
| Comments | Class A, industrial applications |

Criteria

| | |
|---|---|
| Criterion A | Normal operating behavior within the specified limits. |
| Criterion B | Temporary impairment to operational behavior that is corrected by the device itself. |

## Standards and regulations

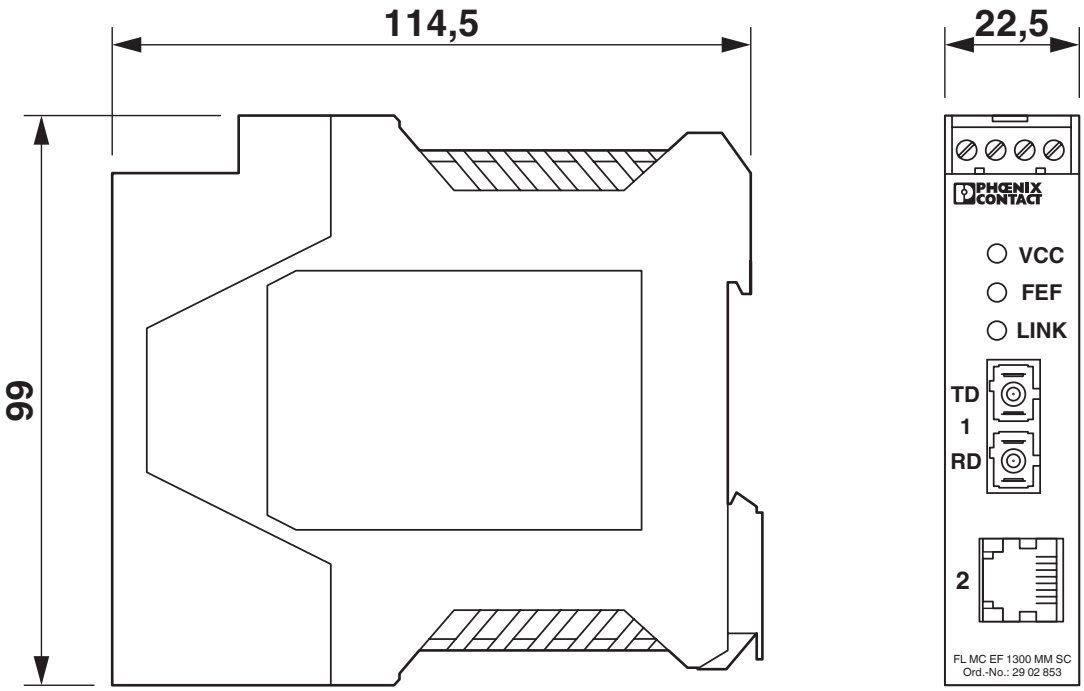
| | |
|---|---|
| Free from substances that could impair the application of coating | VDMA 24364:2018-05 |
| Electrical isolation | according to IEEE 802.3 |

## Mounting

| | |
|---|---|
| Mounting type | DIN rail mounting |

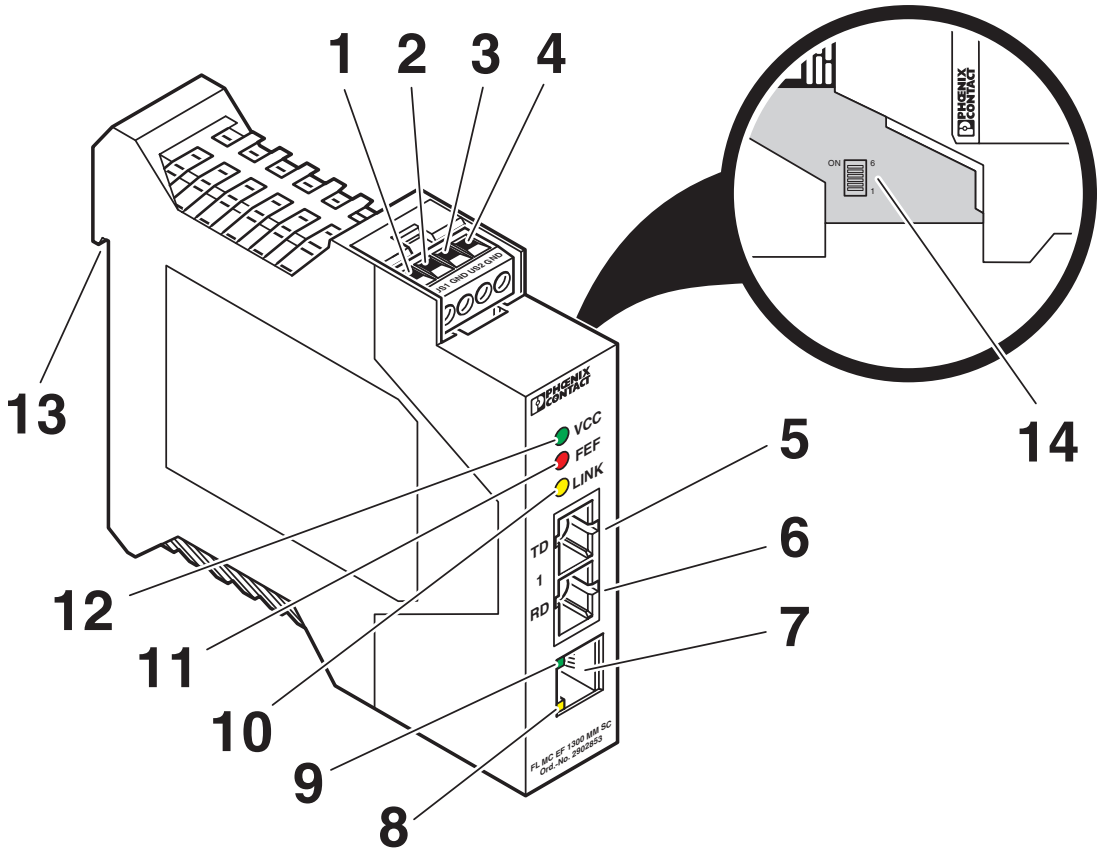
## Drawings

Dimensional drawing



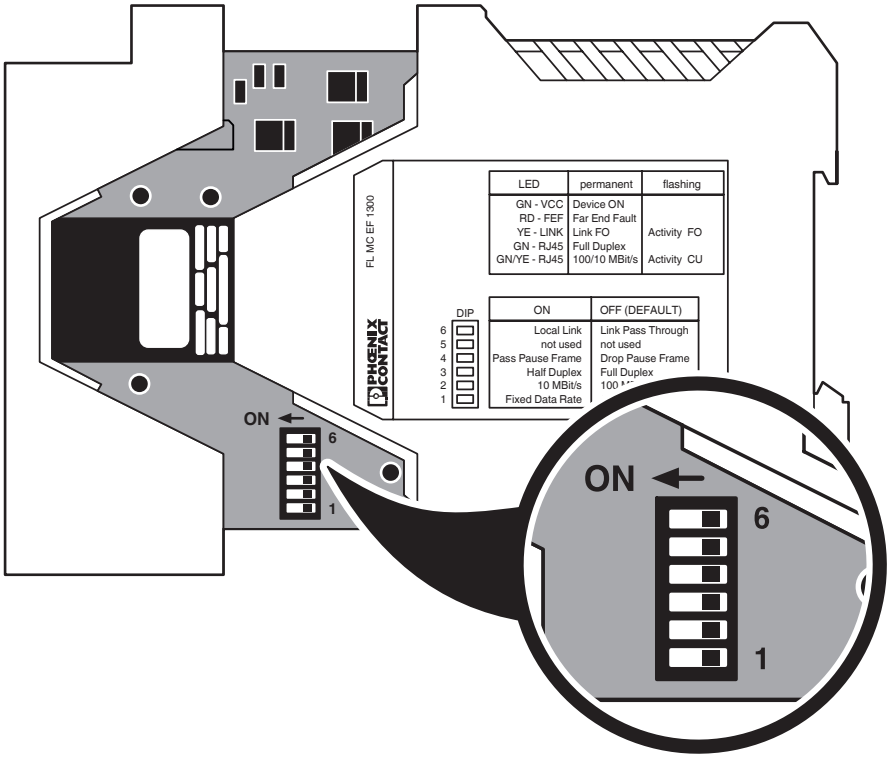

Slim design

Schematic diagram



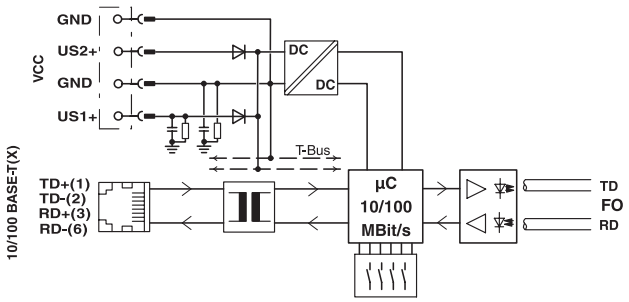

Function elements

Schematic diagram




DIP switches

Block diagram




Basic circuit diagram

## Approvals

To download certificates, visit the product detail page: https://www.phoenixcontact.com/us/products/2902853

**KC**
Approval ID: MSIP-REI-PCK-2902853

**UL Listed**
Approval ID: E238705

**cUL Listed**
Approval ID: E238705

**DNV GL**
Approval ID: TAA00001KR_7

**cUL Listed**
Approval ID: E199827

**UL Listed**
Approval ID: E199827

**IECEx**
Approval ID: IECEx ULD 24.0009X

**ATEX**
Approval ID: UL 24 ATEX 3197X

## Classifications

### ECLASS

| | |
|---|---|
| ECLASS-13.0 | 19170411 |
| ECLASS-15.0 | 19170411 |

### ETIM

| | |
|---|---|
| ETIM 10.0 | EC001467 |

### UNSPSC

| | |
|---|---|
| UNSPSC 21.0 | 43201500 |

## Environmental product compliance

EU RoHS

| | |
|---|---|
| Fulfills EU RoHS substance requirements | Yes |
| Exemption | 7(a), 7(c)-I |

China RoHS

| | |
|---|---|
| Environment friendly use period (EFUP) | EFUP-50 |
| | An article-related China RoHS declaration table can be found in the download area for the respective article under "Manufacturer declaration". For all articles with EFUP-E, no China RoHS declaration table issued and required. |

EU REACH SVHC

| | |
|---|---|
| REACH candidate substance (CAS No.) | 1-Methyl-2-pyrrolidone (NMP)(CAS: 872-50-4) |
| | Lead(CAS: 7439-92-1) |
| | 6,6'-di-tert-butyl-2,2'-methylenedi-p-cresol(CAS: 119-47-1) |
| SCIP | 70fbbb78-61fb-46e5-96c4-7b683755c9b8 |


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Phoenix Contact USA
586 Fulling Mill Road
Middletown, PA 17057, United States
(+717) 944-1300
info@phoenixcon.com